IN THE FIELD

Vol. 91, No. 1
Winter 2020

Field Museum
Member Magazine

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Winter 2020

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ON THE COVER
Ishbínnaache, an Apsáalooke war shield from an unknown original owner and maker. To the Apsáalooke people, shields are medicine, or Baaxpáa. Baaxpáa is spiritual power only provided by the Creator and channeled through bawaaxpáa, or sacred things. To be a leader or a Chief, you must have strong medicine. (Catalog Number 69639).
FIELD MUSEUM

Let us know your thoughts about *In The Field* magazine. Email your comments to ITF@fieldmuseum.org

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Dear Member,

© KYLE FLUBACKER PHOTOGRAPHY (2019)

Our mission—to fuel a journey of discovery across time to enable solutions for a brighter future rich in nature and culture—is strengthened by broadening access to Field Museum science and learning.

Late last year, the Museum's Board of Trustees added a new tenet to the institution's strategic plan—our commitment to promote inclusion, diversity, equity, and accessibility. We will make a dedicated effort to bring new perspectives to the work we do—by incorporating diverse voices, providing greater accessibility, and removing barriers to equity for our visitors, staff, and partners.

In keeping with this commitment, we invite you to celebrate Black History Month this February honoring African American culture and accomplishments with programs throughout the month. A special exhibition on the legacy of Carl Cotton is now open in the T. Kimball and Nancy N. Brooker Gallery. Cotton was a creative, talented African American exhibitions preparator and taxidermist at the Field from 1947 to 1971 and was one of the few African American taxidermists in the museum industry. Read his remarkable story on page 12 and see the pullout calendar in this issue for more Black History Month events.

Later this spring, the Museum will open *Apsáalooke Women and Warriors*. This exhibition, curated by Native American scholar Nina Sanders, will tell vibrant stories of the Apsáalooke people through materials from the Field Museum's historic collection alongside more than 25 works of contemporary Apsáalooke art. Read more on page 6.

The Field Museum has always been a place for learning and cultural understanding. I invite you to visit, explore, and discover again this year.

Sincerely,

Richard W. Lariviere, PhD

President and CEO

Jamee Field Kane and her husband Michael Kane.

© ROBERT CARL

Trustee Spotlight

JAMEE FIELD KANE

BY GINEVRA S. RANNEY,
INSTITUTIONAL ADVANCEMENT

Your family founded the Field Museum and today you are the sixth generation to serve as a leader. What makes this place special to you, personally?

The Field is vital to Chicago. Everything we do brings the world to our city, giving people access they would not otherwise have to Earth's history and human history. The learning the Field Museum inspires is so vast it's nearly impossible to calculate.

What was the first organization to interest you?

The Nature Conservancy of Illinois. I knew I wanted to support conservation causes but I'd never served on a board so I didn't know what I was doing! A longtime friend asked and I couldn't say "no." I learned a ton and the experience helped me become a more skillful Trustee of the organizations I now serve.

What about the Field Museum most inspires you?

We are always trying new and innovative things. I love the thoughtfulness and creativity the Museum brings to new exhibitions, programs, and especially our research and conservation efforts. The Field is historic and can be perceived as stodgy and traditional, but efforts like the rapid inventories we are leading in Peru and Colombia uncover new species, inform conservation, and lead to major new discoveries.

Are there philanthropists you admire?

Lots of "big name" philanthropists inspire me because they can really tackle and move the needle on an issue. But, I am moved most by those who don't have deep pockets, and still find a way to commit to the causes they care about. They aren't the largest contributors, but they are often the most thoughtful, considerate and admired donors.

What factors do you consider before saying yes to a board position?

When we moved to Lake Forest and had kids, I didn't have time to continue my involvement with many of the organizations I believed in. For me, it came down to what was most meaningful in my life and most beneficial to the city I love....and the Field Museum was the one I didn't cut! This place is so important to Chicago—and the world beyond—and I am proud my family and I are part of it.

The Field is vital to Chicago. Everything we do brings the world to our city, giving people access they would not otherwise have to Earth's history and human history.

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We gratefully acknowledge members of the Board of Trustees, whose leadership and philanthropy make the Field Museum an extraordinary force for science and learning.

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List as of December 2019

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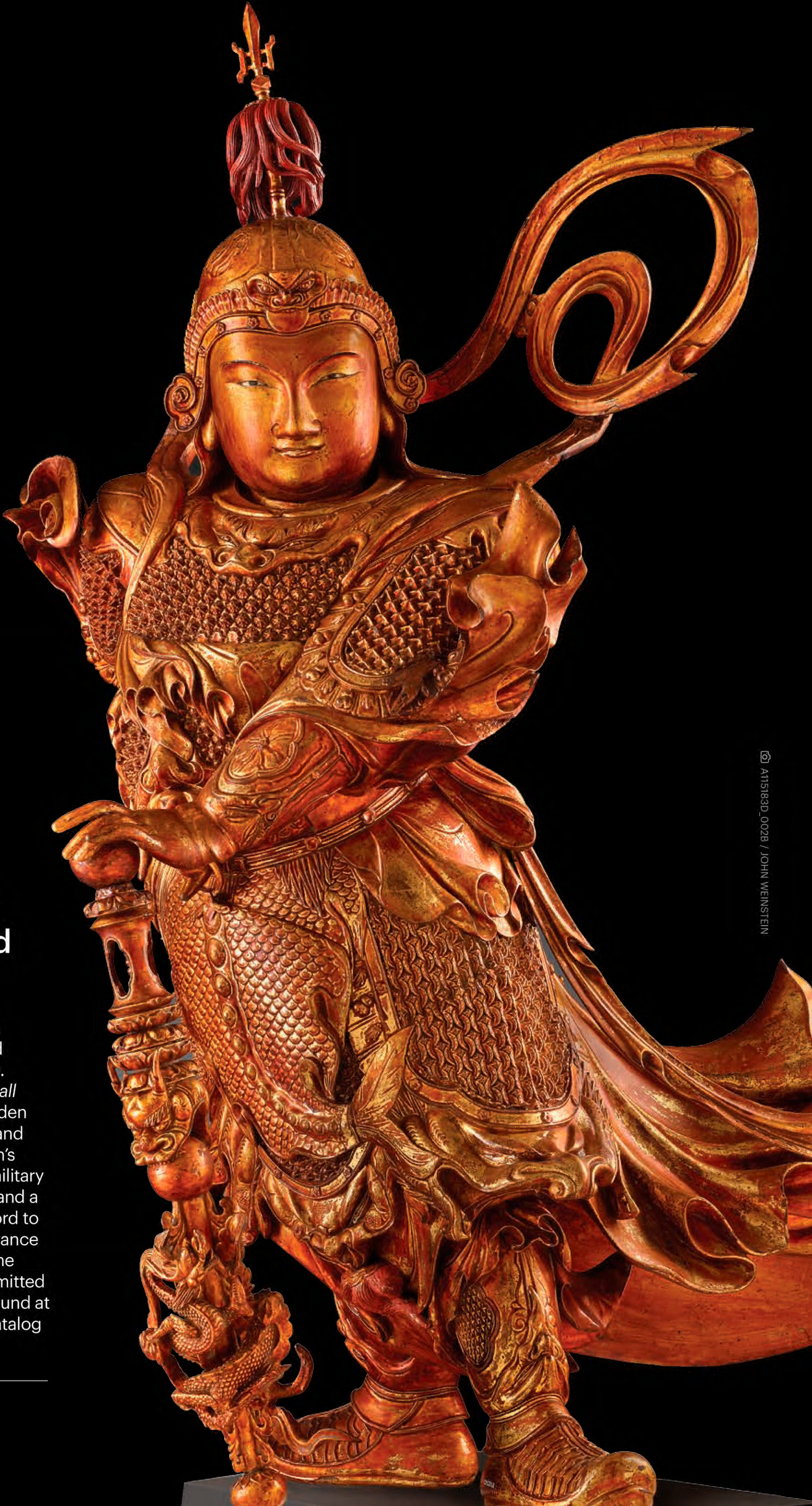

A115183D_002B / JOHN WEINSTEIN

On your next visit, explore 10,000 years of Chinese history and culture at the Field.

The Field Museum's first curator of Asian Anthropology, Berthold Laufer, collected this striking figure in Beijing around 1910. Currently on display in the *Cyrus Tang Hall of China*, this lacquered and gilded wooden statue dates to the 17th or 18th century and depicts Wei Tuo, a guardian of Buddhism's written laws and wisdom. He dons full military armor, bordered by mythical creatures, and a general's headgear. He holds a vajra sword to fend off demons attempting to gain entrance to the temple. Sculptures of this fearsome bodhisattva (an enlightened being committed to the salvation of humankind) can be found at Buddhist temples throughout China. (Catalog Number 120261).

KYLE FLUBACKER PHOTOGRAPHY (2019)

Young visitors learn about the American Giant Millipede.

EARTH'S SMALLEST SUPERHEROES

BY CONNIE EYER, INSTITUTIONAL ADVANCEMENT

When the Field Museum first planned to host the Museum of New Zealand Te Papa Tongarewa's *Fantastic Bug Encounters!*, the exhibition team knew they wanted to put their own touch on it. Insects are a huge part of the scientific research done behind the scenes at the Field. Accounting for the largest number of specimens in any of our collections, the Museum's 17 million bugs are studied by scientists around the world for evolution, ecology, and conservation.

What better way to showcase how important bugs are to the Museum and the world around us than a live bug zoo?

Fantastic Bug Encounters! features larger-than-life models to teach guests about the amazing adaptations bugs display and how they are important to their specific ecosystems. The live element allows Museum staff to facilitate meaningful interactions between guests and bugs, many of which are native to Illinois.

KYLE FLUBACKER PHOTOGRAPHY (2019)

A Museum staff member shows a young guest how to hold a Patent Leather Beetle.

"My goal with the exhibition is to try to dispel the fear of insects. I have an intrinsic love of them and advocate for them," said Insect Collections Digitization Specialist Robin DeLaPeña, who was instrumental in recommending species for the live bug zoo. "I want people to hold them and understand them and the role they play in our existence," she added.

Throughout the day, guests can interact with several different species—including a Madagascar hissing cockroach named Princess—while specially trained staff members answer questions about how bugs really are Earth's smallest superheroes.

BRING YOUR FAMILY AND LEARN ALL ABOUT THE FANTASTIC BUGS OUR SCIENTISTS STUDY EVERY DAY IN THIS SPECIAL, FAMILY-FRIENDLY EXHIBITION OPEN NOW THROUGH APRIL 19, 2020.

Fantastic Bug Encounters! has been developed by the Museum of New Zealand Te Papa Tongarewa with Weta Workshop Limited

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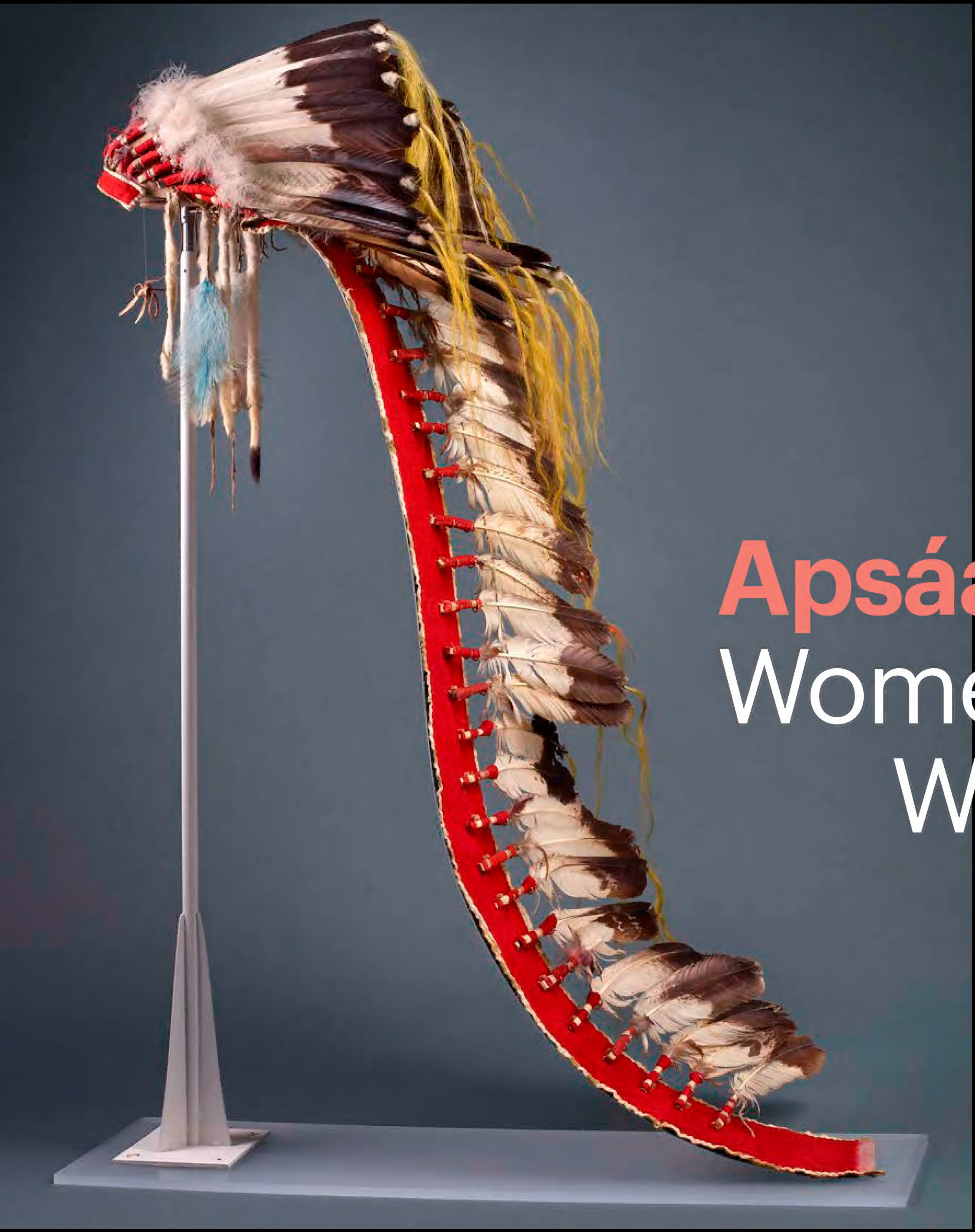

Apsáalooke Women and Warriors

Nina Sanders
GUEST CURATOR,
NEUBAUER COLLEGIUM FELLOW,
APSÁALOOKE NATION

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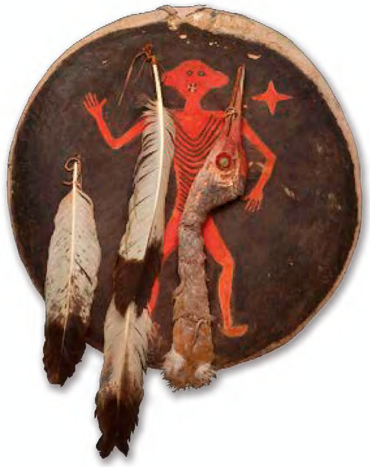
(Clockwise from above) War bonnets, or Báashbaleikkupe, are important symbols of achievement and leadership. We decorate bonnets with eagle feathers because we are taught the soul leaves and enters through one's head. Crowning your head with eagle feathers brings your prayers and thoughts closer to the Creator. (Catalog Number 6942).

Apsáalooke Women and Warriors is curated and contributed to by many Apsáalooke scholars and artists including (left to right) Phenocia Bauerle, Sharmayne Hill, Nina Sanders, and JoRee LaFrance.

Chíischipaaliash Koo Ishbínnaachick—the war shield owned by Wraps His Tail. A well-known Apsáalooke warrior, Wraps His Tail led a rebellion against the US government in the 1880s in response to restrictions on intertribal warfare and free movement. His shield shows one of two legendary boys who went throughout the land destroying monsters and evil beings. (Catalog Number 71736).

ADAM SINGS IN THE TIMBER



Women are at the center of Apsáalooke traditions and the vessels of our culture.

The Apsáalooke people (also known as the Crow Nation of America) of the Northern plains have a long legacy of artistry and bravery. In celebration of Apsáalooke historic and contemporary culture, *Apsáalooke Women and Warriors* will showcase materials from the Field Museum's collection—including seven Apsáalooke war shields—alongside more than 25 works of contemporary Apsáalooke art.

I am honored to lead the curation of *Apsáalooke Women and Warriors* with the assistance of other Apsáalooke scholars and artists, as it is the first time the Field Museum has invited a Native American to curate a major exhibition. We are all thankful and fortunate to work with such celebrated Apsáalooke artists and scholars as Kevin Red Star, Birdie Real Bird, Ben Pease, Bethany Yellowtail and Aaron Brien. This collaboration between the Field Museum, the Apsáalooke people, and the Neubauer Collegium for Culture and Society of the University of Chicago will bring the vibrancy and power of Apsáalooke culture to the world. My hope is that the public will connect with us deeply and endeavor to learn more about all Indigenous people.

All Apsáalooke people are artists; each person is born with or acquires gifts that make life beautiful and meaningful. From birth, Apsáalooke people are taught to care for all things by utilizing our gifts. Each artwork in *Apsáalooke Woman and Warriors* embodies the deep respect each artist has for the dedication, time, and love that goes into a work of art. Each piece is a celebration of our culture.

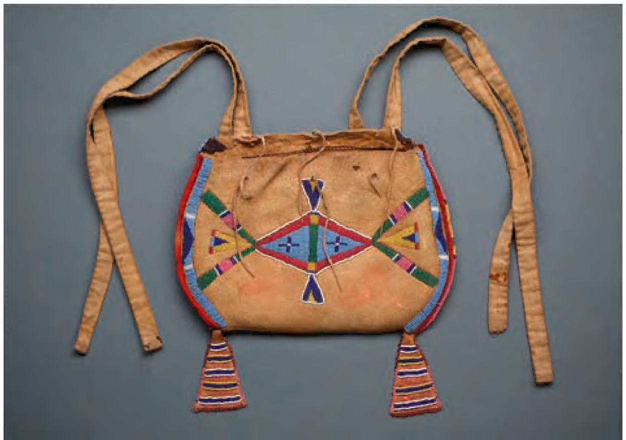
Women are at the center of Apsáalooke traditions and the vessels of our culture. Women built and directed the camp, made everything, and provided the love and strength necessary to ensure the longevity and vitality of our people. Because the Apsáalooke were egalitarian, women were also warriors and chiefs, and men were given space to bead and live as female.

Apsáalooke war shields are emblematic of the artistry, bravery, and balance between men and women. Each shield, made by a different warrior, represents bravery, courage, power, and protection. When not in use, the shields were cared for and protected by the women of a warrior's family. Apsáalooke families traditionally displayed shields in and outside of the home, on horses during parades, and on their person during special events. We hold great respect and reverence for the shields as they represent a great spiritual power that protected and defended the Apsáalooke people. The Crow Nation has graciously given permission to display the shields and other historical items from the Field Museum's collection.

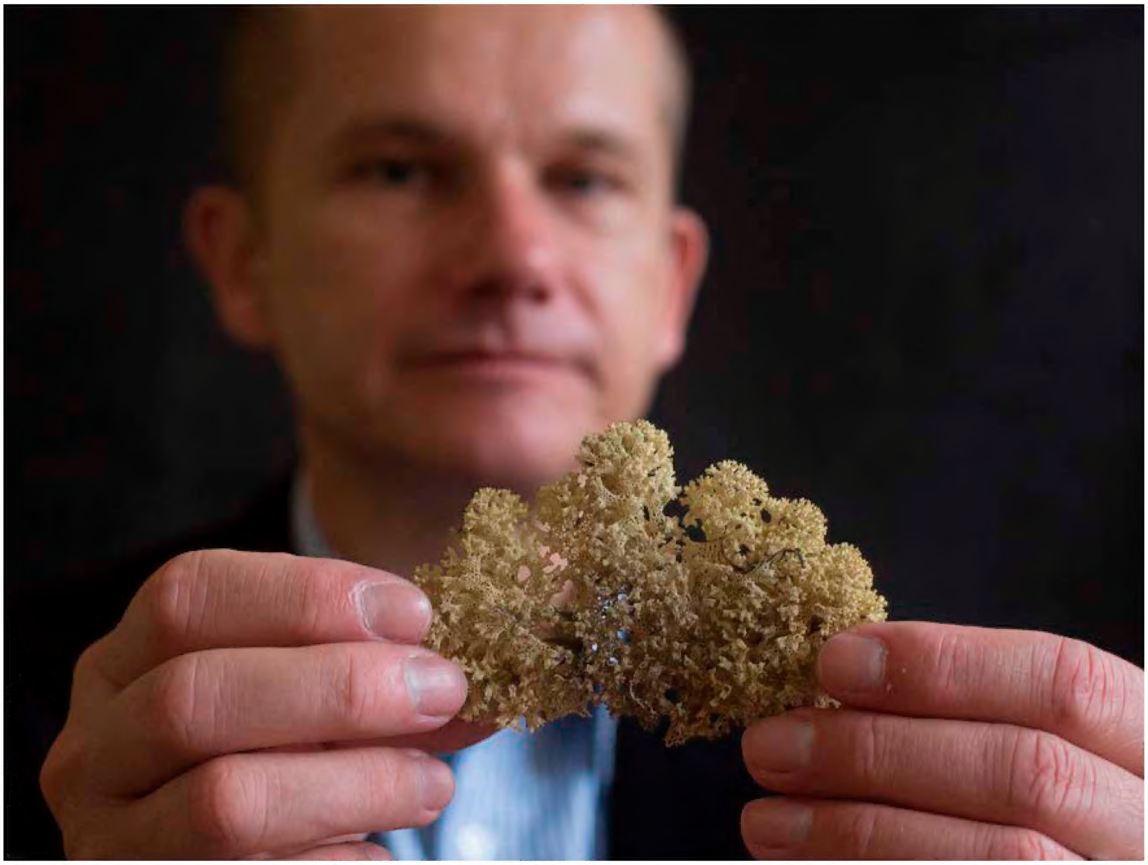
It is with great pride that we invite you to join the celebration of Apsáalooke culture this spring! Aho!

Apsáalooke Women and Warriors *will open March 13, 2020 and run through April 4, 2021.*

THIS EXHIBITION IS JOINTLY ORGANIZED BY THE FIELD MUSEUM AND THE NEUBAUER COLLEGIUM FOR CULTURE AND SOCIETY AT THE UNIVERSITY OF CHICAGO, OPENING AT BOTH SITES IN MARCH 2020.



A Baaisshe, or beaded work bag. This beautiful bag would have held beads, sinew, and other necessary items to create beadwork. It's similar to one that would have been owned by Finds Them and Kills Them—a famous Baté (transgender person), beadworker, and warrior. (Catalog Number 69563).



(Left) Vice President of Science and Education Thorsten Lumbsch, PhD with his favorite lichen—a coral Lichen (Cladia ferdinandii). This species of lichen is unique to Australia and was collected by Lumbsch in 1994.

(Below) Modern-day Lichens growing on a tree in Taiwan. Lichens occur in virtually all ecosystems, where they play an important role in water and nutrient cycles and in vegetation succession on soil, rock, and bark surfaces.

DANIEL LE

WHEN THE DINOSAURS DIED, LICHENS THRIVED

BY KATE GOLEMBIEWSKI, PUBLIC RELATIONS

Thorsten Lumbsch, PhD, is the Field Museum's Vice President of Science and Education, but he also studies lichens—organisms made of fungi and algae living together. While there's a wealth of data on modern lichens, scientists like Lumbsch don't know much about prehistoric lichen species. So, when Lumbsch read a recent paper on the extinction of early birds at the same time as the dinosaurs 66 million years ago, he wondered how this mass extinction event affected lichens. "I thought, 'My god, the poor lichens, they must have suffered too. How can we trace what happened to them?" said Lumbsch.

The asteroid collision that killed the dinosaurs 66 million years ago caused clouds of ash to block out the sun and rapidly cool the planet's temperature. Plant life was devastated. Lumbsch and his post-doctoral student, Jen-Pan Huang, suspected that lichens would have been affected too because, while they aren't plants, they have leafy structures and absorb energy from the sun. But lichen DNA showed something different.

By comparing the Field's large dataset of modern lichen DNA with the features of fossilized lichens from millions of years ago, Lumbsch and Huang were able to build a lichen family tree that showed when evolutionary changes occurred. They discovered a boom in new species of leafy lichens soon after the mass extinction that killed the dinosaurs and many land plants. This suggests that lichens—like mammals, birds and frogs—seized the opportunity to evolve into new species to fill the open ecological niches in the environment.

JEN-PAN HAUNG

"For me, it's fascinating because you would not be able to do this without large molecular datasets. This wouldn't have been possible ten years ago," said Lumbsch. "It's another piece to the puzzle to discover solutions for a brighter future rich in nature."

Lumbsch and Huang discovered a boom in new species of leafy lichens soon after the mass extinction that killed the dinosaurs and many land plants.

FIELD MUSEUM SCIENCE LINKS ANCIENT ICE AGE TO SPACE DUST

BY PHILIPP HECK, PHD, ROBERT A. PRITZKER ASSOCIATE CURATOR OF METEORITICS AND POLAR STUDIES, NEGAUNEE INTEGRATIVE RESEARCH CENTER

About 466 million years ago, during the Ordovician period, the seas began to freeze in Earth's polar regions. The new range of temperatures around the planet created the perfect environment for a boom in the evolution of new species. The cause of this ice age is widely debated, but I recently participated in a new study that argues it was triggered by extra dust in the atmosphere from a giant asteroid collision in space.

There's always space dust floating down to Earth. Our atmosphere gains nearly 40,000 tons of extraterrestrial material every year, but that's a tiny fraction of all the dust in our atmosphere, which also includes volcanic ash, dust from deserts, and sea salt. However, when a 93-mile-wide asteroid—about the distance from Chicago to Milwaukee—broke apart 466 million years ago between Mars and Jupiter, it created more dust than usual by a factor of a thousand.

"The timing appears to be perfect. The extra dust helps explain the global cooling—by filtering out sunlight," said the study's lead author, Birger Schmitz, a professor at Lund University, Sweden and research associate at the Field Museum.

Our international team of researchers looked for traces of space dust in 466-million-year-old terrestrial rocks, and compared it to tiny micrometeorites from Antarctica as a reference. We also analyzed rocks from the ancient seafloor, looking for elements that rarely appear in Earth rocks and for isotopes—different forms of atoms—that show hallmarks of extraterrestrial origins.

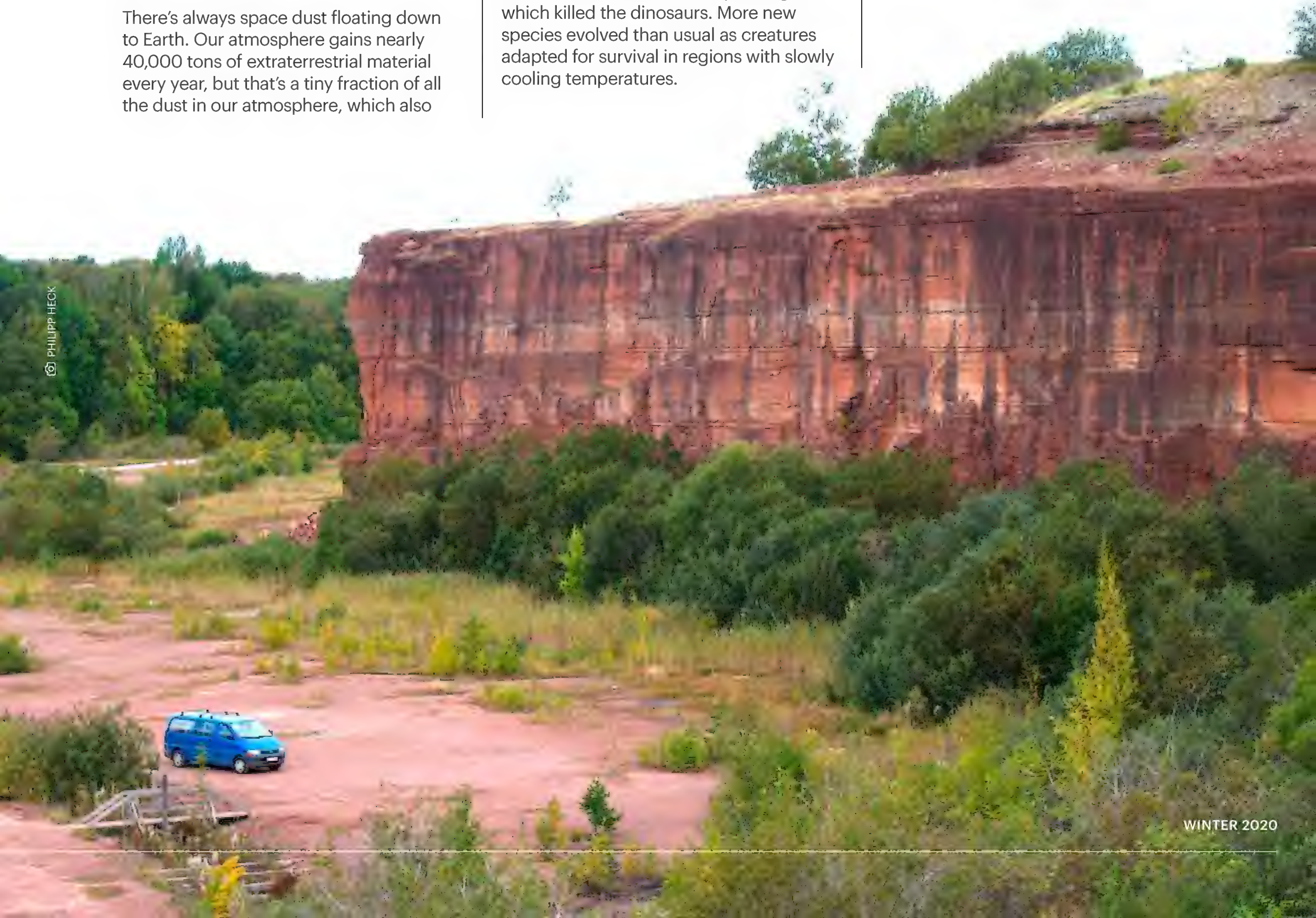
The extra dust fell to Earth over a period of two million years, so the cooling was gradual enough for life to adapt, rather than creating a mass extinction like the asteroid collision 66 million years ago, which killed the dinosaurs. More new species evolved than usual as creatures adapted for survival in regions with slowly cooling temperatures.

BIRGER SCHMITZ

(Above) A fossil trilobite. Trilobites and many other organisms evolved into more diverse forms in the Ordovician.

(Below) Cliffs in Sweden made of 466-million-year-old sedimentary rock that was once an ancient seabed. The gray horizontal line in the rock shows where the sea level was low due to global cooling and ice buildup.

THE ROBERT A. PRITZKER CENTER FOR METEORITICS AND POLAR STUDIES WAS ESTABLISHED BY A GENEROUS GIFT FROM THE TAWANI FOUNDATION.



PHILIPP HECK

Artists in Science

ANN PRAZER

BY CONNIE EYER, INSTITUTIONAL ADVANCEMENT

Art isn't just painting, drawing, and sculpting beautiful works for display. Artists like Ann Prazer apply the skills they have to many different jobs. A mount shop supervisor and mount maker at the Field Museum, Prazer uses her artistic talent to create object mounts for our world-class exhibitions.

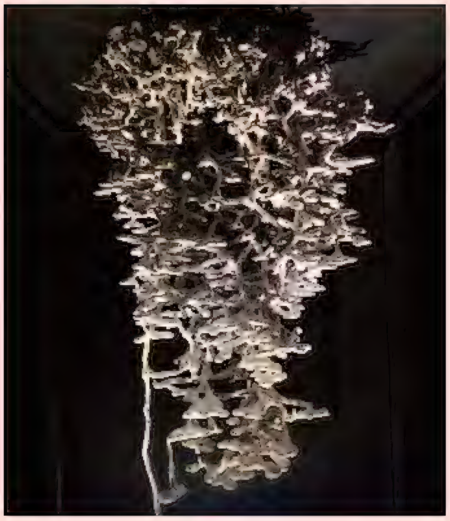
Prazer received her BFA in Studio Art from Miami University in 2003. She worked in art galleries before discovering the Field was a perfect place for her background in art, museum studies, and metalworking.

"Every day is different. Sometimes the crew and I will be making mounts in the shop. Other days we may be installing an exhibition, meeting with other departments to collaborate on exhibition planning, or transporting and handling precious artifacts within the Museum," said Prazer.

Exhibitions at the Field, including special traveling exhibitions, pose diverse challenges for the mount shop. Each object has its own unique set of requirements based on its condition, material stability, weight, and center of gravity. One of Prazer's latest pieces is an aluminum cast of an ant's nest (right), for which she had to strategically place the steel brackets because there was very little surface area to grip.

"The best part of my job is problem-solving and finding ways to support and display an object, especially when I need to stay within guidelines set by the departments designing and developing the exhibition," said Prazer. Although adhering to specific requirements is part of the job, she notes art and engineering often overlap with the science of the objects she is tasked to display.

ON YOUR NEXT VISIT TO THE MUSEUM, TAKE A LOOK AT THE CAREFULLY CRAFTED MOUNTS IN OUR EXHIBITIONS AND MAKE SURE TO STOP BY *FANTASTIC BUG ENCOUNTERS!* TO SEE PRAZER'S LATEST WORK.



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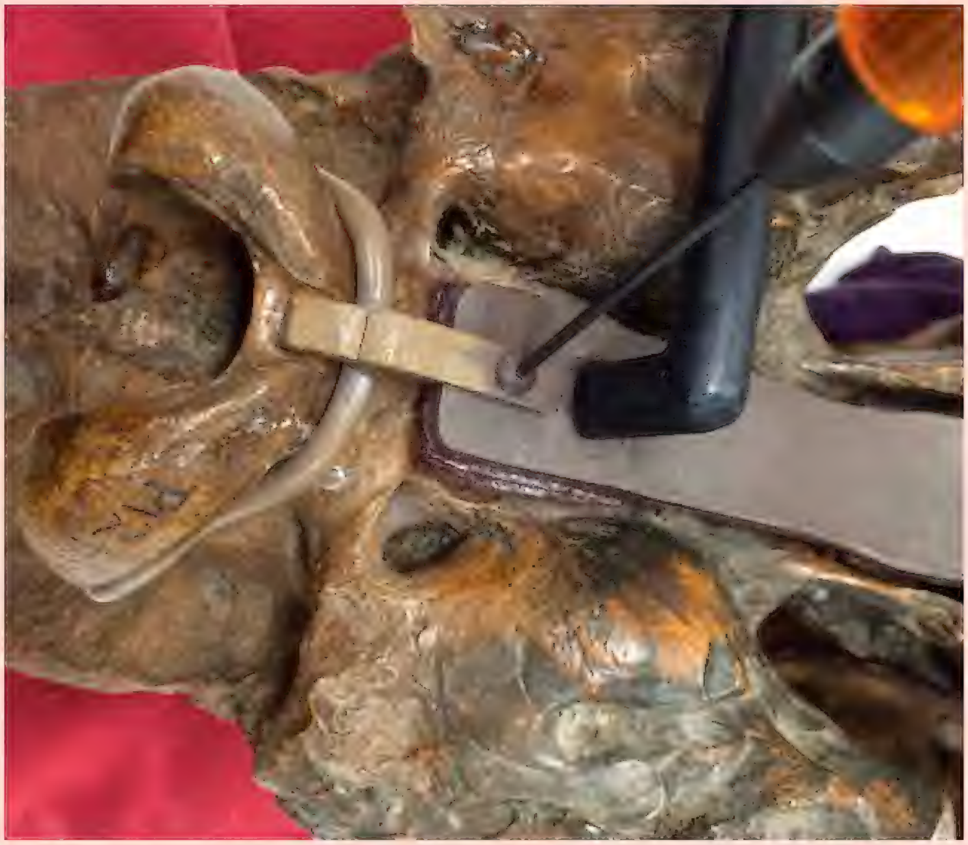


Mount of a Smilodon *(saber-toothed cat) skull. This specimen is currently on display in the* Griffin Halls of Evolving Planet.

ALL IMAGES © ANN PRAZER

ETHAN COCHRANE

(Left) *Jason Kariwiga (center) from the University of Papua New Guinea and Mark Golitko (right) near where the skull was first discovered in 1929. Kariwigia is explaining the work to a group of hunters from a nearby village.*

(Below) The "Aitape skull," discovered in 1929 by the geologist Paul S. Hossfield.

ARCHAEOLOGY OF FUTURE DISASTERS

BY KATE GOLEMBIEWSKI, PUBLIC RELATIONS

Tsunamis spell calamity. These giant waves—caused by earthquakes, volcanic eruptions, and underwater landslides—are some of the world's deadliest natural disasters. Scientists studying the effects of tsunamis have discovered what could be the earliest record of a person killed by one: the skull of someone who lived 6,000 years ago in what's now Papua New Guinea.

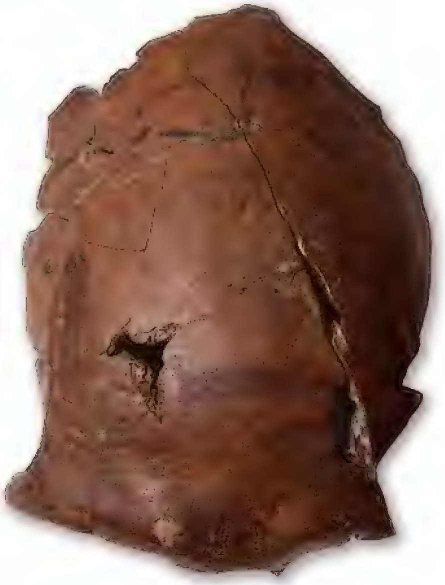
The skull in question was found in 1929, near the small town of Aitape on the Sepik coast of Papua New Guinea. It was buried in geological sediments having the distinctive hallmarks of ancient tsunami activity, such as dramatic sediment variation and landward fining of sediment grains.

"The skull has always been of great archaeological interest because it's one of the few early skeletal remains from the area," said Mark Golitko of the University of Notre Dame and the Field Museum.

"Given the evidence we have in hand, we are more convinced than before that this person was either violently killed by a tsunami, or had their grave ripped open by one—leading to their head, but not the rest of their body, being naturally reburied where it then remained undiscovered in the ground for some 6,000 or so years," explains James Goff at the University of New South Wales in Australia.

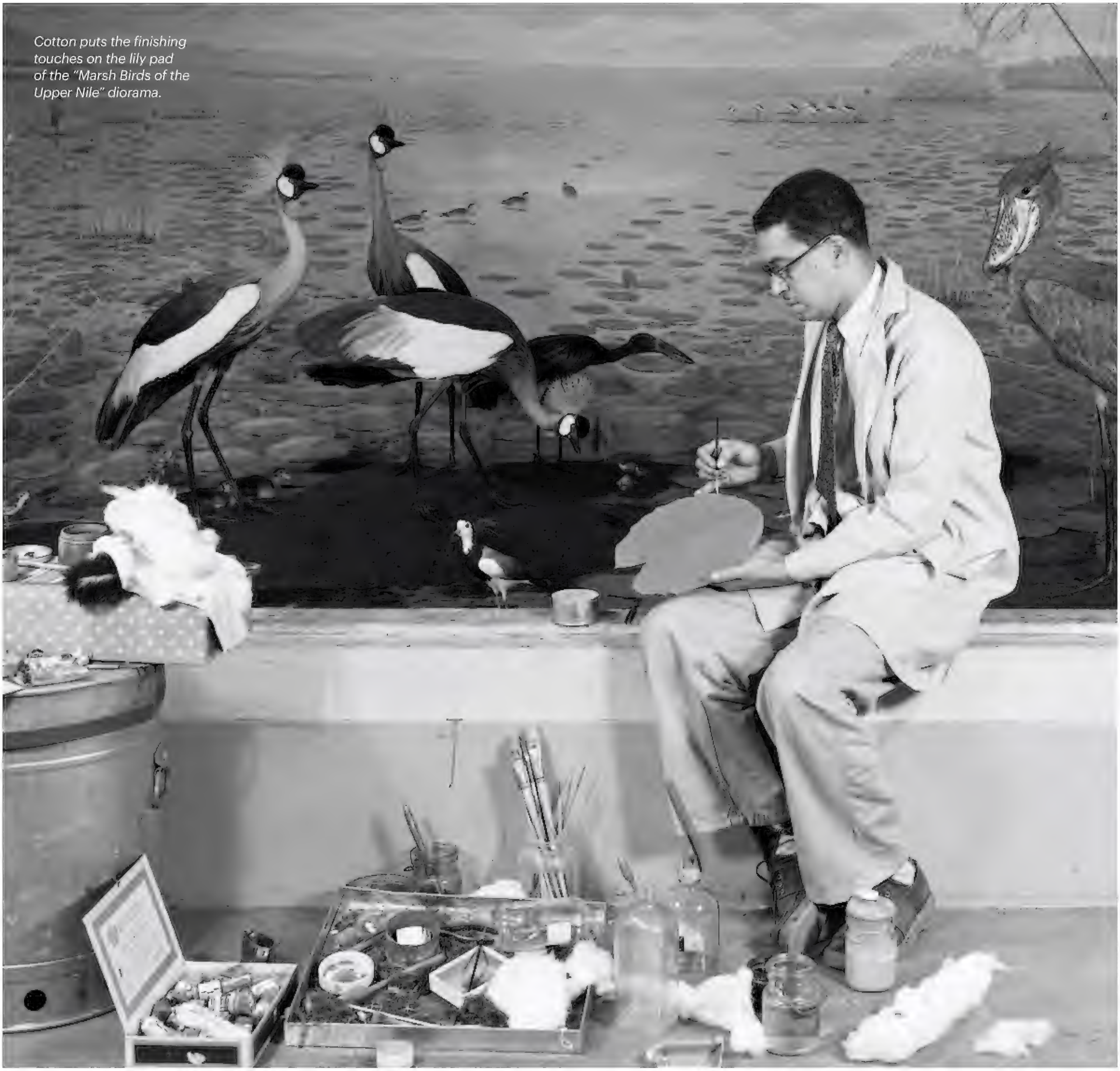
The Field Museum's Regenstein Curator of Pacific Anthropology John Terrell, PhD, has been conducting archaeological and anthropological research in this coastal region since 1990.

"It is easy to be fooled by the great beauty of Papua New Guinea. Its Sepik coast must be as close to paradise on Earth as anybody could want. This person's skull is evidence that here, as elsewhere, natural disasters can suddenly and unexpectedly turn the world upside down," said Terrell. "Maybe studies like this will help scientists convince skeptics today that we must take climate change and rising sea levels seriously."



ARTHUR DURBAND

"The skull has always been of great archaeological interest because it's one of the few early skeletal remains from the area."



Cotton puts the finishing touches on the lily pad of the "Marsh Birds of the Upper Nile" diorama.

Z86431 / FIELD MUSEUM (1953)

A NATURAL TALENT: THE TAXIDERMY OF CARL COTTON

GN79590 / FIELD MUSEM (1961)

Cotton's natural curiosity and artistry led him to the Field where he studied under some of taxidermy's greats, including Leon Pray and Leon Walters.

(Left) Carl Cotton discusses the Leon L. Walters method with Museum members at Members' Nights 1961. The Walters Method uses a cellulose acetate process to reproduce the skin of an animal.

(Below) Cotton places letters on a label for a new exhibit on hybrid birds installed in 1951.

Tori Lee
EXHIBITIONS

Carl W. Cotton holds a unique place in taxidermy history. On staff at the Field Museum from 1947 until his death in 1971, he bridged taxidermy's "Golden Age," begun by Carl Akeley, and the modern era of diorama making. He was also the Field's only African American taxidermist and one of few in the museum industry.

Born in 1918, Carl Cotton grew up in Chicago's "Black Belt," a section of the South Side that confined most of the city's African American population. In this restricted, overcrowded space blossomed a thriving cultural scene. Cotton's contemporaries included famous artists and writers like Charles White and Gwendolyn Brooks.

Carl, too, was an artist—though an unusual one. From an early age, Cotton was fascinated with preserving animals. He often stuffed the bodies of squirrels and birds found in vacant lots, family pets, and sometimes the large game brought to him by neighbors, serving as a community taxidermist.

Z85559 / FIELD MUSEUM (1951)

Following his service in the US Navy during World War II, Cotton attended the Art Institute of Chicago where he honed his artistic talent. Cotton's natural curiosity and artistry led him to the Field where he studied under some of taxidermy's greats, including Leon Pray and Leon Walters.

Promoted to staff taxidermist in 1952, Cotton specialized in birds. But, unlike a typical taxidermist, he was also talented in mounting mammals, reptiles, and fish as well as creating environmental elements. His most famous work—"Marsh Birds of the Upper Nile"—is still on display in Hall 3W, "Bird Habitats," near the Rice Wildlife Research Station.

As part of Black History Month, a new exhibition honors Carl Cotton's legacy and celebrates the accomplishments of African Americans at the Field. Featuring taxidermy, interviews, and archival footage and images, *A Natural Talent: The Taxidermy of Carl Cotton* opened in the T. Kimball and Nancy N. Brooker Gallery on January 31, 2020 and will close on October 4, 2020.

THE FIELD MUSEUM WOULD LIKE TO THANK THE RELATIVES AND DESCENDANTS OF CARL W. COTTON, AS WELL AS TIMUEL AND ZENOBIA BLACK FOR SHARING CARL COTTON'S STORY.

Former Conservation Assistant Allison Cassidy treats a sculpture of a woman from Sudan during the 2016 restoration effort. (Catalog Number 337153).

MALVINA HOFFMAN BRONZES GET A NEW HOME

BY ALAKA WALI , PHD, CURATOR OF NORTH AMERICAN ANTHROPOLOGY, NEGAUNEE INTEGRATIVE RESEARCH CENTER, AND **SUSAN GOLLAND**, EXHIBITIONS

Malvina Hoffman's bronzes have been a part of the Field Museum's history since 1933. The sculptures were commissioned by Stanley Field to illustrate the "Races of Mankind" and were installed as part of the Field Museum's contribution to the 1933-1934 Century of Progress World's Fair. While the mastery of these sculptures is awe-inspiring, the original exhibition used theories of scientific racism—the false, pseudo-scientific belief that there is empirical evidence to justify racism—to show how human physical differences could be categorized into distinct "races." Now in a new gallery, the story of these sculptures highlights the beauty of cultural diversity.

In 1968, the original exhibition was de-installed and the sculptures were scattered throughout the Museum's hallways, subjecting them to damage as people touched them. Finally, with a generous gift from Trustee Pamela K. Hull, granddaughter of Stanley Field, the Museum conservation staff was able to treat and restore many of the sculptures. In 2016, the Museum opened *Looking at Ourselves: Rethinking the Sculptures of Malvina Hoffman* in the Comer Gallery, near the Maori Meeting House on the upper level.

Looking at Ourselves tells the story of how the presentation of the concept of race in the 1933 exhibition was deeply flawed. It also includes what we have learned since that time about human physical differences and how categorizing humans into "races" continues to cause harm.

Near the end of 2019, the exhibition was reinstalled in a new location on the upper mezzanine, near the *Cyrus Tang Hall of China*. It includes Spanish translations and updated label text based on comments our team has received from guests since the exhibition first opened. The bronze sculptures themselves remain compelling and we hope they will provoke our visitors to continue to reflect on such issues as scientific racism, the uses of art, and the value of cultural diversity.

Prakash Narain Haksar, a Kashmiri man from Northern India. (Catalog Number 337097).

ALL IMAGES © FIELD MUSEUM

MARCUS DRYMON

DNA REVEALS STRANGE SHARK DIET

BY KATE GOLEMBIEWSKI, PUBLIC RELATIONS

Tiger sharks have a reputation for being the "garbage cans of the sea"—they'll eat just about anything from dolphins to rubber tires. Scientists have recently announced in a new paper in *Ecology* that baby tiger sharks eat familiar backyard birds like sparrows, woodpeckers, and doves.

"Tiger sharks will see an easy meal and snatch it up, but I was surprised to learn the sharks were eating songbirds—I assumed they'd be seabirds," said A. Watson Armour II Manager of the Pritzker Lab Kevin Feldheim, PhD, who led the DNA analysis that uncovered what kinds of birds the sharks were eating. "It was one of the coolest projects I've been associated with using DNA to tell a story."

Of the 105 sharks they studied, 41 had bird remains in their digestive systems. These remains, gently removed from the live sharks by pumping their stomachs, were difficult to identify due to partial digestion. So, Feldheim's co-authors sent the bird remains to the Field Museum's Pritzker Laboratory for Molecular Systematics and Evolution for DNA analysis. Feldheim examined the DNA sequences present in the birds' tissues and compared them to existing databases to determine what species the sharks were eating.

While tiger sharks have been known to eat seabirds, this is the first time scientists have evidence that tiger sharks eat terrestrial songbirds. This is likely because the sharks were in the Gulf of Mexico during peak migration season for these birds.

"Tiger sharks scavenge on songbirds that have trouble flying over the ocean. During migration, they're already worn out, and then they get tired and fall into the ocean during a storm," adds Feldheim. He notes that the terrestrial birds might make more attractive prey than seabirds because seabirds are better adapted to water environments.

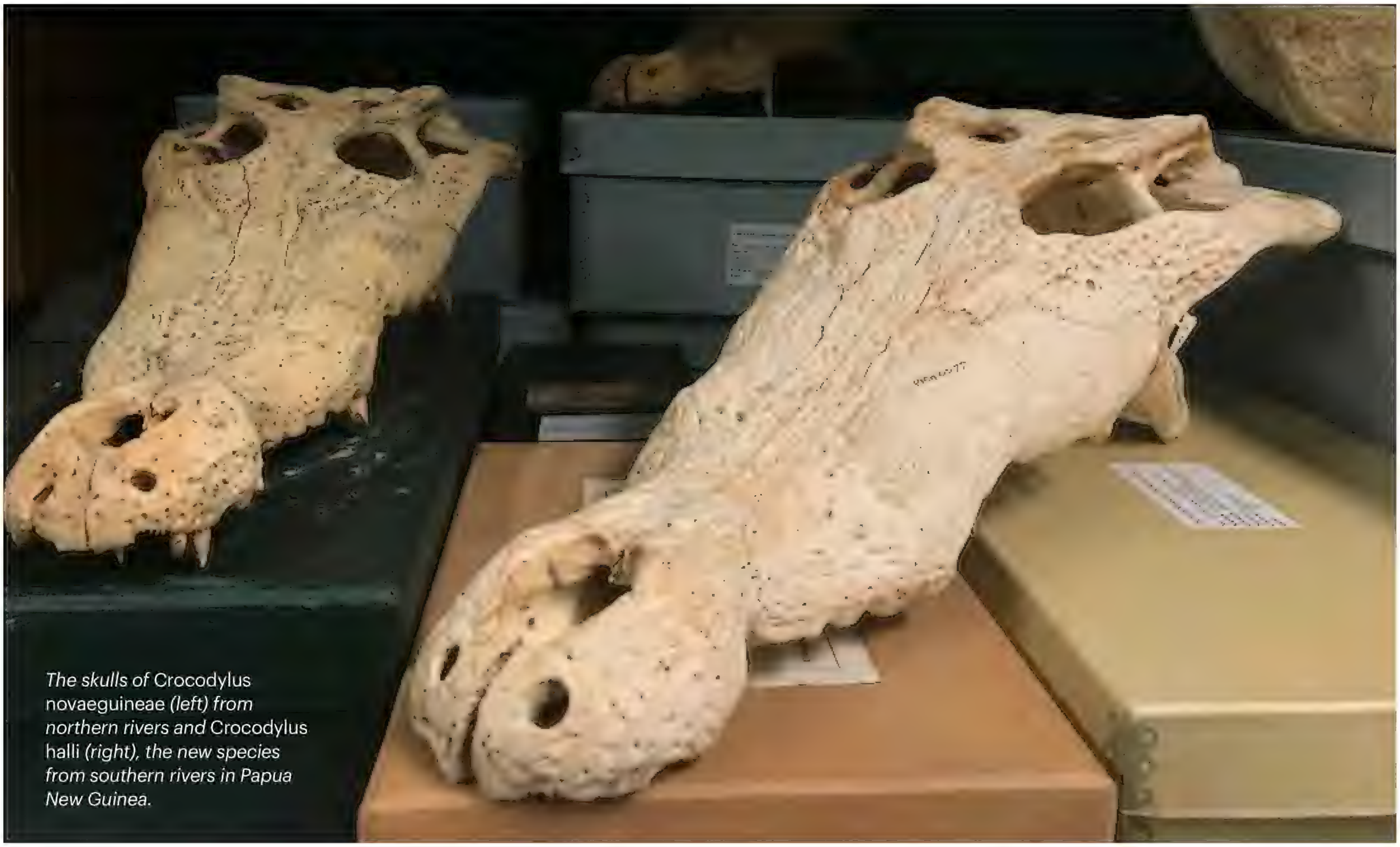
The study gives scientists a better understanding of tiger sharks, which could ultimately help us to protect them. "All sharks are in trouble," said Feldheim. "We don't know the extent of how industrialized fishing has taken a toll, but the vast majority of top predator populations have declined in recent years."

MARCUS DRYMON

(Top) Scientists gently gather the stomach contents of a young tiger shark.

(Above) A group of bird feathers retrieved from a juvenile shark's stomach.

COME LEARN MORE ABOUT THE IMPORTANT RESEARCH KEVIN AND OUR DNA LAB ARE CONDUCTING AT THE SUMMER FIELD SPOTLIGHT EVENT ON JUNE 7, 2020. FOR MORE DETAILS, SEE THE PULLOUT CALENDAR IN THIS ISSUE OR VISIT FIELDMUSEUM.ORG/MEMBEREVENTS.



The skulls of Crocodylus novaeguineae (left) from northern rivers and Crocodylus halli (right), the new species from southern rivers in Papua New Guinea.

A NEW SPECIES UNDER OUR SNOUTS

BY CALEB MCMAHAN, PHD,
GANTZ FAMILY COLLECTIONS CENTER

Collections Manager Caleb McMahan examining crocodile skulls in the Field Museum's collections.

New species turn up frequently—new insects, new mammals, new plants, new fishes. But new species of crocodile are not a regular discovery. There are only about two dozen recognized species of crocodilians (crocodiles, alligators, caiman, and gharials) in the world. But, by looking at 90-year-old crocodile skulls, my colleague Chris Murray (Southeastern Louisiana University) and I have recently described a new species of ten-foot-long crocodile that was hiding right under our noses.

The species is from New Guinea. We had known the island was home to a unique species of crocodile since the New Guinea Crocodile, *Crocodylus novaeguineae*, was officially described in 1928 by late Field Museum herpetologist Karl Schmidt. He based his description on specimens from north of the Central Highlands in New Guinea. But since then, researchers have wondered if the island was actually home to two separate species, one in the north and one in the south.

Philip Hall, a former researcher at the University of Florida, laid the initial groundwork on subtle ecological differences and variation between populations of this crocodile north and south of the central mountain range. The synthesis of Hall's observations and our new data built the case that these two populations were different from each other and should be recognized as distinct species. Our new crocodile, *Crocodylus halli*, occurs in southern river drainages of Papua New Guinea and is named after Philip Hall, in recognition of his important work on these animals.

We spent many hours collecting data on skulls from a variety of museums, including the Field. This discovery highlights the very tangible needs for referential specimens in our collections and for taxonomists in our museums. Not all new species are discovered from fieldwork in unexplored parts of the globe. Like this crocodile, there are innumerable undescribed species in the Field Museum's collections.

ALL IMAGES © CALEB MCMAHAN

MACKENZIE FAIRCHILD

(Left) Hornbeck compares two carved elephant ivory armlets from the Sudan. Partially visible is a carved elephant tusk. (Catalog Numbers 88651, 210522, and 257549).

(Below, left) A lidded cup/salt cellar from Benin, Nigeria carved out of elephant ivory. This object, fabricated by an African ivory carver, was likely intended for European trade and is currently on display in the Benin gallery of Africa. (Catalog Number 210425).

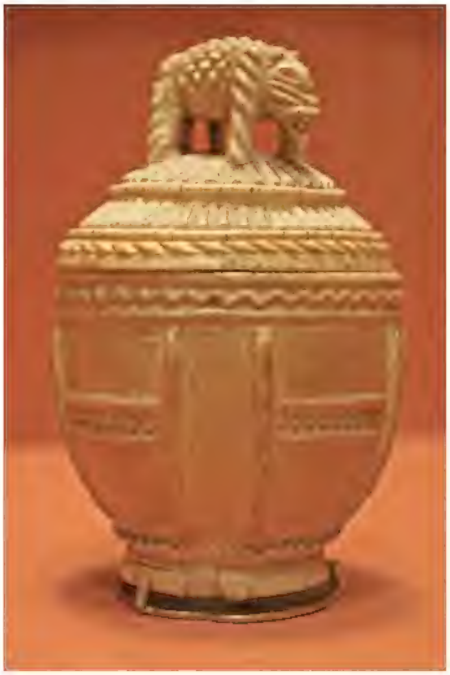
CARING FOR A COMPLICATED COLLECTION

BY STEPHANIE HORNBECK,
CHIEF CONSERVATOR, ANTHROPOLOGY,
GANTZ FAMILY COLLECTIONS CENTER

As an object conservator, my academic training and professional experience involve the conservation of material culture, not biological conservation of living species. Yet with ivory artifacts and other objects made from animal materials, the two meanings of "conservation" sometimes intersect. To support species conservation, ivories are highly regulated and museum collections today ethically support their legal acquisition. As an ivory specialist, my work sometimes involves assisting the Field and other museums with ivory identification to support travel documentation for regulatory compliance.

For a millennia, elephant ivory was restricted to royal use in African and Asian cultures, and eventually traded globally as a luxury material. Rising demand in the 19th century yielded production of everyday items like toiletry sets, cutlery handles, and piano keys. By the end of the century, elephant populations were in dramatic decline.

Today, Asian and African elephants are endangered. With poaching on the rise again in recent decades, President Obama announced a strategy to combat wildlife trafficking in 2013. One important aspect of the strategy was to strengthen a near-total federal ban on African elephant ivory commerce, leading to 2016 modifications to the African Elephant rule of the 1973 Endangered Species Act.

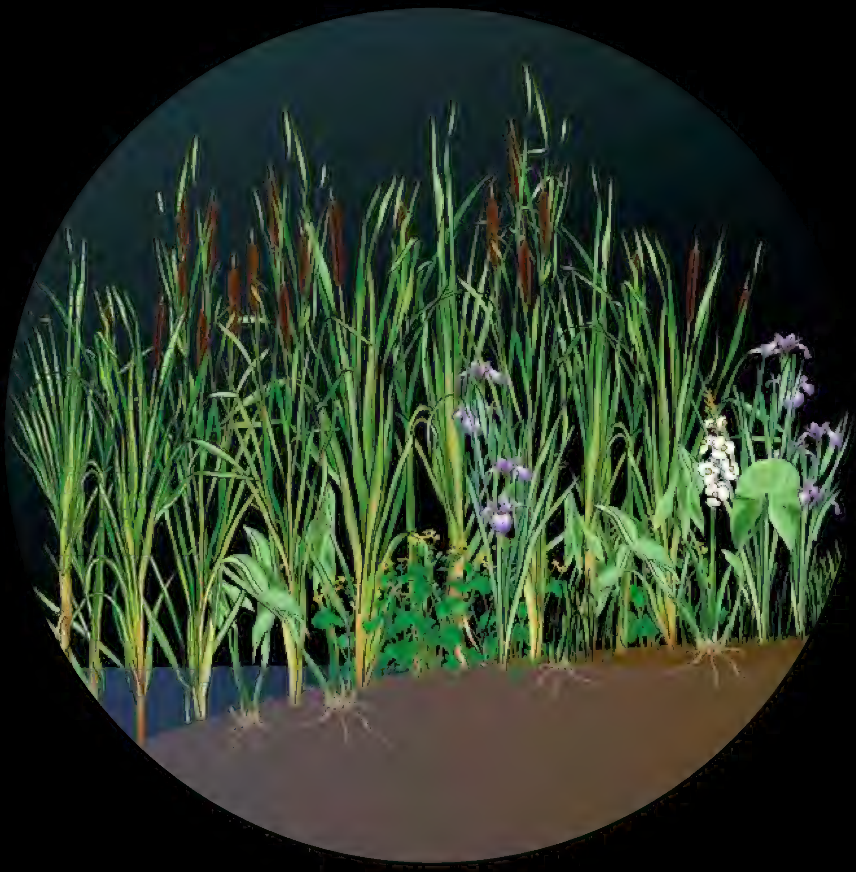


STEPHANIE HORNBECK

Conservators protect and preserve artifacts and art objects for future generations. While my profession does not involve the biological conservation of elephants, in my work with ivory artifacts, I am committed to respecting the laws enacted to protect living elephants. Through lectures and publications, I strive to educate conservators about the larger context of ivory conservation and advocate for responsible collections stewardship.

LEARN MORE:
YOU CAN READ AN *ART CONSERVATION PERSPECTIVE: SAVING THE AFRICAN ELEPHANT AND IVORY CULTURAL HERITAGE* BY HORNBECK AND TERRY DRAYMAN-WEISSER IN *CURATOR: THE MUSEUM JOURNAL*, VOLUME 61, ISSUE 1. OR READ AN EXCLUSIVE INTERVIEW WITH HORNBECK BY VISITING OUR BLOG AT FIELDMUSEUM.ORG/BLOG.

Paleobotanist Az Klymiuk, PhD, had a mystery to solve. While studying cellularly preserved fossil plants, Klymiuk wondered why some had many fossil fungi inside their roots and why others had very few. Since these fossils were from prehistoric swampy wetlands, Klymiuk decided to look for clues in a species of modern wetland plant sharing a similar environment to the fossils: **cattails.**



© AZ KLYMIUK CC-BY-NC-SA 4.0

Exploring Ancient Ecosystems:

HOW DID PLANTS EVOLVE?

Kate Golembieswki
PUBLIC RELATIONS

“I was studying fossil plants that are 48 million years old. In these fossils, we can see the plant cells and everything in them, including fungi. In describing these fossil fungi, I realized we actually don’t know much about fungi living in wetland plants today,” said Klymiuk. “There’s been very little work done, next to nothing in terms of their ecology and distribution.”

So, Klymiuk began collecting cattail roots from several wetland areas, sampling plants from the shoreline all the way to the deepest point at which the plants grew. Back in the lab, they examined the roots under a microscope and compared the fungi in the cattail roots that had been growing at different depths underwater.

Klymiuk discovered the submerged roots hardly had any fungi, but roots from dry land were full of them. Since the number of fungi living in plant roots appears to indicate whether the plants are growing fully in water or up on the shoreline, scientists looking at fungi in fossil plant roots can make a better guess about the plants’ environments. This discovery, which is being published in the journal *Mycologia*, could change how we interpret some parts of the fossil record, including an important community of early land plants.

“This gives us a new way to understand what we’re seeing in the fossils,” said Klymiuk. “When we find a large amount of fungus in a plant root, that root was probably not submerged during its life.”

These findings invite bigger questions about how land plants first evolved. Scientists had long assumed plants first made their way from water to land by teaming up with root fungi to help them absorb nutrients from the soil; the fact that root fungi don’t do well in water means scientists might need to rethink how land plants first evolved.

Beyond the potential applications of this work, Klymiuk is excited about the project for the sake of discovery. “There’s this mysterious, microscopic world that we don’t usually think about.”

(Opposite) In addition to research and collections management, Klymiuk is a scientific illustrator, which comes in handy when describing the kinds of plants occurring across wetland margins.

(Left) Klymiuk isolated hundreds of species of fungi that occur within cattail roots. Some are weak pathogens, but others may be mutualistic.

COME LEARN MORE ABOUT THE IMPORTANT WORK AZ IS DOING IN OUR PALEOBOTANY COLLECTIONS AT THE SPRING FIELD SPOTLIGHT EVENT ON MARCH 28, 2020. FOR MORE DETAILS, SEE THE PULLOUT CALENDAR IN THIS ISSUE OR VISIT FIELDMUSEUM.ORG/MEMBEREVENTS.

AZ KLYMIUK CC-BY-NC-SA 4.0

MEET AZ, THE FIELD’S NEW PALEOBOTANIST

Az (Ashley) Klymiuk, PhD, joined the Field Museum as paleobotany collections manager in the Gantz Family Collections Center, but their interest in plants goes way back. Klymiuk grew up surrounded by the Boreal Forest in rural Alberta. “I spent my summers pressing plants and digging up bog sludge,” said Klymiuk. “I’ve always been interested in the world around me.”

Klymiuk fell in love with paleobotany while an undergraduate and became interested in plant-microbe interactions during their doctoral work at the University of Kansas. “I’m genuinely fascinated by plants and their evolution, because so much of paleobotany is detective work,” said Klymiuk. “I am excited to put these puzzles back together and chip away at some fundamental mysteries.” At the Field, Klymiuk cares for a collection of thousands of fossil plants and works to unlock the mysteries of how plants and fungi evolved.

In addition to scientific work, Klymiuk is a writer and artist who loves mentoring students. As an indigenous Métis Canadian, they work towards representation in science. “I want to raise people up and empower them,” said Klymiuk.

Children enjoy harvesting corn at the recently updated Pueblo in the Crown Family PlayLab.

FIELD MUSEUM, KATIE SULLIVAN (2019)

> "Our family has been involved with the Field Museum for more than 50 years and we are delighted to be a partner in the Museum's efforts to engage Chicago's youngest explorers and visitors with disabilities in the *Crown Family PlayLab*"
>
> —William C. Kunkler III, Field Museum Trustee

NEW LOOK FOR THE CROWN FAMILY PLAYLAB

Last summer, the *Crown Family PlayLab* unveiled fun new features and updates to popular activity spaces that reinforce the Museum's accessibility efforts. In addition, the exhibition is now open longer hours, allowing young learners and their caregivers more opportunities for hands-on experiences.

"This important modernization would not have been possible without the support of the Crown Family," said Richard W. Lariviere, PhD, president and CEO of the Field. "We're grateful for their initial investment a decade ago and for a wonderful new gift, which enabled us to renovate the PlayLab to meet the needs of today's audiences."

Over the last decade, the *Crown Family PlayLab* has served more than 1 million early learners and their families. It is a play-focused introduction to the natural world. A series of immersive activity areas encourage children to be curious, explore, play, and learn.

Updates to the Playlab include:

The Science Lab
Includes eye-catching specimens that can be explored using real scientific tools like magnifying lenses, scales, and measuring tapes.

Dino Dig
When early learners head over to the Dino Dig area, they'll notice new dinosaur nests, costumes, and puppets. The space has a new wall graphic of SUE that directly showcases what fossils children find and helps them make a connection to what they've uncovered.

Pueblo
At the Pueblo, the Museum's Native American Advisory Group worked with exhibition developers to improve the space's cultural accuracy.

Illinois Woodland
Children can make an onstage debut as they star in a play as their favorite Illinois woodland animal.

BookNook
Now home to a selection of natural history books that highlight inclusive and diverse perspectives, the updated BookNook makes story time a culturally enriching experience.

Rhythm Room
The multigenerational Rhythm Room has new music stands and instruments that let children experiment with sound and cultivate their inner musician.

Discovery Play Studio
A new addition to the PlayLab, young explorers can test their creativity with a 6-foot-wide magnetic wall, a building blocks station, and a wheelchair-accessible sensory table.

The Crown Family PlayLab is designed for learners ages 2-6 and is now open every day from 10:00 am to 3:30 pm.

Young members enjoy a table full of children's science books in the Rosenthal Library at Members' Nights 2019.

JOHN WEINSTEIN

Philanthropy Spotlight

TREASURES FOR THE NEXT GENERATION

BY ANNE MORGAN, DIRECTOR OF ESTATE & PLANNED GIVING AND **KYLE DANIELS,** PLANNED GIVING COORDINATOR, INSTITUTIONAL ADVANCEMENT

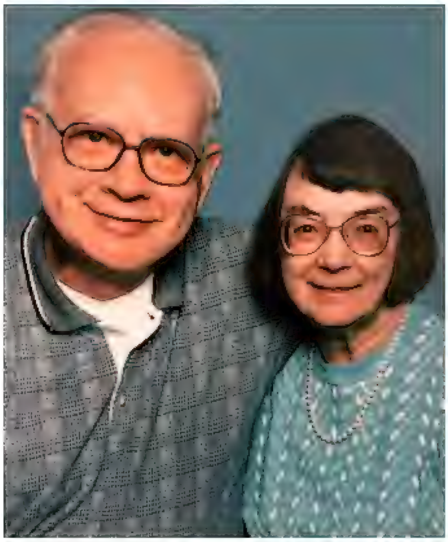
Ayer Society member Edward C. Jerkey left nearly $4 million to the Field Museum to support the Marie Louise Rosenthal Library, one of the largest and finest natural history libraries in the world. Mr. Jerkey passed away peacefully on February 5, 2019 at the age of 90.

A Field Museum member for more than 40 years, Mr. Jerkey visited the Field Museum many times in his youth. According to his longtime friend, Judy Wilson, "When Ed spoke of his childhood in Chicago, his fondest memories were of the time he spent at the Field Museum. As an adult, he always enjoyed the special exhibitions. The one he spoke most often of was *The Treasures of King Tutankhamun* in 1977."

Mr. Jerkey worked as a pipefitter at the Fair Company on State Street and was married to his wife, Theresa, for more than 60 years before her death in 2010. He was also an avid reader—especially of history and nature.

The Jerkeys showed their love of the Field Museum through their philanthropy by including the Museum in their estate plans and becoming members of the Edward E. Ayer Society. Their bequest is the largest single gift ever made to the Rosenthal Library and their generosity will profoundly impact the collection, conservation, and digitization of important—and in some cases one-of-a-kind—scientific publications and books.

"Edward Jerkey's generous gift will maintain a vital collection that parallels the scientific research taking place at the Museum, leading to increased understanding of the natural sciences and humanity's relationship with nature," said Head of Library Collections Gretchen Rings. "To maintain these collections is to enable the Museum to preserve and provide access to an invaluable resource for the benefit of a global public."



EDWARD AND THERESA JERKEY

Edward and Theresa Jerkey

The Edward E. Ayer Society honors those who have included the Field Museum in their estate plans or other planned gifts. A planned gift in any amount ensures the Field's lasting success by supporting future research and education. To find out more, please contact Director of Estate and Planned Giving Anne Morgan at amorgan@fieldmuseum.org or 312.665.7143.

> “We found that if there’s an increase in temperature, there may be some ability to acclimate or adapt.”

MICHELLE THOMPSON

CAN FROGS TAKE THE HEAT?

BY KATE GOLEMBIEWSKI, PUBLIC RELATIONS

There’s a species of poison frog called the “strawberry poison frog” or the “blue jeans frog,” depending on who you ask. They’re smaller than a quarter, with bright red bodies and navy blue limbs, and they live in shady Costa Rican forests. Or, they did, until humans began cutting down the forests to create farmland, which is hotter and drier than the frogs’ natural habitat.

A team of scientists, including Field Museum conservation ecologist Michelle Thompson and several undergraduate students in the Research Experiences for Undergraduates program, wanted to know how the strawberry frogs were acclimating to their new environment. So, Thompson and her colleagues caught some and built mini temperature-controlled habitats to see what temperatures the frogs gravitated toward. They found that frogs taken from the cleared land chose to spend their time in warmer parts of the enclosure, while forest frogs preferred a slightly cooler environment.

But no matter where they were from, the frogs got too hot at about the same temperature—the upper limit of what their bodies can tolerate is a hard line. “We found that if there’s an increase in temperature, there may be some ability to acclimate or adapt, but in situations where temperatures change drastically, it may mean disaster for them,” said Thompson.

Because the frogs’ maximum temperature limit appears to be fixed, long-term climate change will likely be dangerous for them. However, Thompson notes there is some hope in the way frogs can adapt in the short term to habitat change.

“This is something we can act on. Where habitat conversion cannot be avoided, leaving small pockets of vegetation will allow small populations of frogs to persist,” said Thompson.

THIS MATERIAL IS BASED UPON WORK SUPPORTED BY THE NATIONAL SCIENCE FOUNDATION UNDER GRANT NO. DBI-1559779.

JUSTIN NOWAKOWSKI, UC DAVIS

(Top) A strawberry poison frog sits on a leaf inside the tropical forests of Costa Rica.

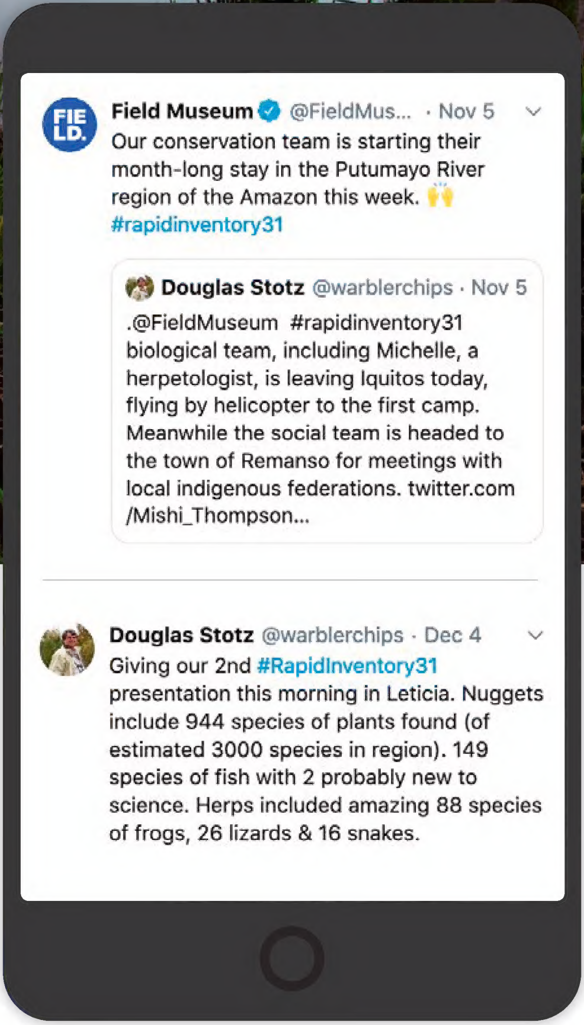
(Above) Juana Rivera-Ordonez, a student at University of Washington and the lead author of the study, uses a temperature gun to monitor the frogs’ environment during the experiment.

JORGE ENRIQUE GARCÍA MELO

Sunrise on Laguna la Culebra in the Colombian Amazon.

Tweets from the Field:
Rapid Inventory 31

The Keller Science Action Center's Andes-Amazon team just finished its 31st rapid inventory, this time in the Putumayo River region. Their goals are to document the region's biodiversity, facilitate dialogue between the many partners of the region, and contribute to strategies that support conservation in this area. Field ecologist Doug Stotz tweeted #RapidInventory31 updates from the team during their month-long stay in the Amazon.



Field Museum @FieldMus... · Nov 5
Our conservation team is starting their month-long stay in the Putumayo River region of the Amazon this week. 🙌
#rapidinventory31

> **Douglas Stotz** @warblerchips · Nov 5
> .@FieldMuseum #rapidinventory31 biological team, including Michelle, a herpetologist, is leaving Iquitos today, flying by helicopter to the first camp. Meanwhile the social team is headed to the town of Remanso for meetings with local indigenous federations. twitter.com/Mishi_Thompson...

Douglas Stotz @warblerchips · Dec 4
Giving our 2nd #RapidInventory31 presentation this morning in Leticia. Nuggets include 944 species of plants found (of estimated 3000 species in region). 149 species of fish with 2 probably new to science. Herps included amazing 88 species of frogs, 26 lizards & 16 snakes.

Follow @FieldMuseum to see findings and photos from Rapid Inventory 31, and read the Field's blog to see what it's like to live in the jungle for a month: fieldmuseum.org/lifeinthefield

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Museum Campus Neighbors

ADLER PLANETARIUM

In a dark sky, you can see nearly 4,500 stars with the naked eye. In Chicago's sky, you can see about 35. Come see what you're missing at the Adler Planetarium's newest exhibition, *Chicago's Night Sky*.

Collaboration, curiosity, and experimentation await! The Adler Planetarium's Community Design Labs are flexible spaces for guests to play, come up with and test ideas, create art, and reflect. Let your youngest explorers learn through play in our new Community PlayLab and roll up your sleeves and discover ways to creatively connect with the night sky in our new Community Star Studio.

For more information, tickets, and showtimes visit adlerplanetarium.org

SHEDD AQUARIUM

Two southern sea otter pups rescued in May two days apart in California are now totally at home in Shedd Aquarium's Abbott Oceanarium. The playful male pups are easy to spot by their size and affinity for one another. Visit them soon! Then get a close-up look at fresh and saltwater animals on a behind-the-scenes tour or design a private, personalized guided front-of-scenes tour highlighting your three favorite species. Or take an early-morning yoga session surrounded by tranquil fishes. There are so many ways to look nature in the eye at Shedd Aquarium.

For details, visit www.sheddaquarium.org

Museum Hours

The Field Museum is open from 9am–5pm every day except Christmas Day, with last admission at 4pm. **For special hours, parking, and public transportation options, visit fieldmuseum.org/visit.**

The Field Museum salutes the people of Chicago for their long-standing support of the Museum through the Chicago Park District

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